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IV. *An Account of a Book entitled, Prodromus Crystallographiæ. De Crystallis impropriè sic dictis Commentarium. A Mauritio Antonio Cappeler, M. D. & Centumviro Lucernensi. Lucernæ 1723. 40. By J. G. Scheuchzer, M. D. Coll. Med. Lond. Lic. R. S. S.*

THE Author of this Treatise takes notice in the Preface, that it is only a small Part of a larger Work, which he promis'd the Publick some Years ago, under the Title of *Crystallographia*, and hath now almost ready for the Pres. This greater Work, as he intimates at the Close of this Discourse, is to consist of three Parts, the first of which contains the Definition of Crystal, with the Synonyms given it by several Authors both ancient and modern, and an Account of its Properties, Figure, PELLUCIDITY, specifick Gravity, and Bigness; as also the Place of its Growth, chiefly in regard to *Switzerland*, the most plentiful Country in *Europe*, as to this Sort of natural Productions; the Signs, whereby hidden Crystal Mines may be discover'd, and the Way of working them. In the second Part will be examined the Opinions of several Natural Historians, about the Origin of Crystal, and the Author's own establish'd and prov'd. In the third Part will be shewn the Uses of Chrystal, both Physical and Mechanical, and some few Hints given, relating to the just Value the World has at all Times put upon this beautiful Production of Nature.



The Author divides this present Essay into two Parts, *viz.* a short Commentary upon the *Cryſtallos*, as he calls them, *impropriè ſic dictos*, in the firſt; and an Account of ſuch as he found mentioned in ſeveral Authors, with a Reduction of them under certain Heads, in the ſecond. *Cryſtalli impropriè ſic dicti*, according to the Author's Definition, are ſuch Bodies, either Stones, Metals, or Salts, as have any Reſemblance with the true Cryſtal; either, as to their multangular, regular, or irregular Figure, or as to their PELLUCIDITY, or any other of its eſſential Properties. As the Number of these Bodies is very extensive, ſo an exact Enquiry into them cannot but be both uſeful and agreeable. I just now obſerved, that the *Cryſtalli impropriè ſic dicti* are taken out of Stones, Metals, and Salts. To the firſt belong amongſt other Things ſuch precious Stones, as, in all PROBABILITY, have their certain, determined Cryſtal like Figures, as Diamonds, Amethyſts, &c. To the ſecond belong all Sorts of *Pyritæ*, as also the Growth of Silver, and other Metals, in Form of Trees, or other Things. By the third are understood all Chymical Preparations of Salts, and ſaline Bodies, the Figure of which is, generally ſpeaking, more accurate, than in any of the two former. Several Authors of Note have endeavour'd to explain how, Crystallisation is perform'd, or how it comes, that certain Subſtances ſhoot into Crystals. Dr. *Cappeler* mentions the Hypothesiſ of the learned *Gulielminus*, and that of a late *Swedijſh* Author, *Swedenbergh*; and though he ſeems more to favour the latter, than he doth the former; yet he thinks, that they are both liable to Exceptions. But whatever the Cause or Method of Crystallisation be, our Author takes it for granted, that three Things are absolutely requir'd for it, *viz. Salt*, which muſt al-

ways be an Acid, as is evident by Chymical Experiments, and the very Taste of saline Crystals, *Water* and *Earth*. Crystallisation, as far as can be guess'd by Chymical Observations, is perform'd thus: Particles of certain determined Shapes, swimming in a Fluid of a certain Consistence, are, either by the intestine Motion of this Fluid, or by the Motion of the Air, supposed to circulate perpetually through its Pores, or by some other Cause, brought together, so as to form larger Bodies of a Figure proportionable both to the Degree of Impulsion, and the primitive Shape of the constituent Parts, or determined by these two Things. This Act of Crystallisation, though uniform, as to the Union of Particles consider'd in itself, is yet observed to be very different, and to have different Effects, with respect to the different Nature of the Fluid, in which Crystals are formed, and the Degree of Perfection, to which they are brought. Our Author mentions six different Kinds of Crystallisation, each of which, he intends to explain more fully in his larger Work. The first Sort of Crystallisation, which hath been examin'd with a great deal of Accuracy by *Gulielminus*, is performed in an aqueous Fluid, wherein saline Particles have been dissolved, boil'd to a certain Degree of Consistence, commonly that of a thin *Pellicula* covering its Surface. This aqueous Fluid must be afterwards repos'd in a cool Place, that the saline Particles contain'd in it may form themselves into Crystals, which is done in more or les Time, according to the different Nature both of the Fluid and Salts. All Chymical Preparations of Salts, the Origin of precious Stones, and of the Crystal itself, belong to this first Kind. Our Author observed, that in the *Spiritus aperitivus Glauberi*, (which is a Preparation of *Ciner Clavell.* p. ii. & *Sal Armon.*

*Armon.* p. i.) after a Year's standing, form'd themselves artificial Crystals, in Figure and PELLUCIDITY exactly like the true sexangular Crystal, and pointed on both Sides. The second Kind of Crystallisation differs from the first only in this, that it is performed not in a thin, pELLUCID, aqueous Fluid, but between thick, mineral, or metallical Mixtures, corroded by acid Salts in the Bowels of the Earth. The third Sort is of a middle Kind between the first, and a Coagulation, *viz.* when the Fluid, in which Salts have been dissolved, is, by degrees, entirely evaporated. This Way of Crystallisation is more proper for discovering the primitive Shapes of saline Particles. Our Author hath examined several Salts, both Mineral and Vegetable, and several Chymical Preparations after this Manner, and hath given us their Figures, as they appear'd to him under a good Microscope, in two Tables annexed to this Treatise. The fourth Sort of Crystallisation is perform'd in a still thinner Fluid than Water is, or in the Air; the Sublimations of the Chymists, the Distillation of volatile Salts; Snow, whose wonderful Figure hath been thought worthy the Amusement of several eminent Men; Hail, which is again of very different Shapes; Frost, and that admirable Variety of Trees, Landskips, and other inimitable Figures, which, in very frosty Weather, appear upon Glass-Windows, or other pELLUCID Bodies, must be all reduced to this fourth Sort. The fifth Sort of Crystallisation is perform'd upon the Surface of a thicker Fluid, as Water, between that and a thinner one, as Air; of this Kind is chiefly Ice. The sixth and last Sort of Crystallisation, mention'd by our Author, differs from all the former, in that it is perform'd neither by the Rise of Vapours, nor by the reposing of any Fluid, but on the contrary in a Fluid, which is in a perpetual Motion. That Sort of icy Concretions, which

is observ'd near swift running Waters, and is commonly very porous, not unlike the Tophus, and the stony Concretions in subterranean Cavities, call'd *Stalactitæ*, belong to this last Sort. Thus far what is contained in the first Part,

The second gives an Account of such *Crystalli improprie sic dicti*, or Crystalline Bodies, which are not properly Crystals, as have been mentioned by several Natural Historians both ancient and modern. The Author distributed them into the following Classes, each of which comprehends Stones, Metals and Salts.

Corpora Crystallisata, quæ improprie Crystalli vocantur.

- Class. I. Globosa, rotundata & sphæroidea.
- II. Conica, Conoidea & fusiformia.
- III. Cylindrica, solida aut tubulata.
- IV. Pyramidalia & cuneiformia.
- V. Prismatica, Parallelepipedæ, Rhomboidea, Trapezoidea.
- VI. Polyedrica, & Polygona, regularia & minus regularia.
- VII. Racemosa, Arbusculorum in modum, & filamentosa, filorum, aut capillorum instar nascentia & striatim contexta.
- VIII. Crustis, squamis, lamellisque contexta, sine, vel cum figura propria.
- IX. Corpora, quorum cum Crystallo affinitas in pelluciditate potissimum consistit, figurâ eorum nativâ, vel incertâ vel nondum perspectâ.